DATA DIFFUSION PROCESSING TECHNIQUE

BACKGROUND OF THE INVENTION

1. Field of the Invention:

The present invention relates to data processing techniques and, more particularly, to a data diffusion processing technique.

2. Description of the Related Art:

According to the conventional data processing technique, the control center directly controls every data unit. For example, when processing picture data in a picture zone of 3x3 = 6 units, the picture variation is controlled by data inputted through X-axis and Y-axis. When updating the picture, the control center inputs data through X-1 and Y-1 to substitute data at the first unit, and then inputs data through X-2 and Y-2 to substitute data at the second unit, and then inputs data through X-3 and Y-3 to substitute data at the third unit, and therefore update of the picture is done.

When updating a motion picture at a screen, the control center needs to uninterruptedly scan and update the value of every unit through X-axis and Y-axis so as to keep the content of the display at the screen continuously changed as desired. Therefore, the control center needs to continuously send a big amount of control commands to every unit and to renew the original value of every unit, keeping the motion picture moving.

Because the control center needs to transmit a big amount

of data, a big burden will be given to the control center if the number of units in the picture zone surpasses a certain value, resulting in a picture update delay error. Further, when the conventional data processing technique is applied to the processing of a big scale motion picture in which the distance of every unit is at least several hundred kilometers, different units may receive same data at different times due to different position distances, resulting in a picture update time error and picture processing failure.

SUMMARY OF THE INVENTION

The present invention has been accomplished under the circumstances in view. It is the main object of the present invention to provide a data diffusion processing technique, which causes a variation of data at different positions in a zone by means of a triggering control at assigned triggering positions in the zone without giving a control instruction to every position in the zone as conventional methods did. It is another object of the present invention to provide a data diffusion processing technique, which greatly reduces the amount of control data to be transmitted from the control center. It is still another object of the present invention to provide a data diffusion processing technique, which greatly reduces the time to be used for the transmission of commands from the control center, and accurately controls the time in which the

desired variation of the zone is obtained. It is still another object of the present invention to provide a data diffusion processing technique, which eliminates data transfer delay from the control center to the target positions, preventing a picture update time error.

To achieve these and other objects of the present invention, the data diffusion processing technique includes the steps of a) dividing a zone into a number of positions and giving a respective default value to each of the positions; and b) assigning one of the positions to be the triggering position and then using the assigned triggering position as the initial position to diffusely transfer data from the triggering position to at least one target position in a diffusion direction, for enabling each of the at least one target position to receive the diffusion data from the triggering position and then to diffusely transfer the diffusion data to at least one next target position after a relation operation of the default value the respective target position with the triggering value of the triggering position to convert the default value of the respective target position into a finished value.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a flow chart of the data diffusion technique according to the present invention, explaining the triggering diffusion action.

FIG. 2 is a flow chart of the data diffusion technique according to the present invention, explaining triggering diffusion receiving action.

FIG. 3A is a schematic drawing showing a zone divided into a number of positions according to the present invention.

FIG. 3B is a position default value table according to the present invention.

FIG. 3C is a schematic drawing showing the diffusion order among the positions in the zone according to the present invention.

FIG. 3D is a finished value table according to the present invention.

FIG. 4 is a table showing an example of diffusion combination according to the present invention.

FIG. 5 is a schematic drawing showing a zone divided into a number of sub-zones, each sub-zone divided into a number of positions according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, a data diffusion processing technique in accordance with the present invention comprises the step of dividing a zone **10** into a number of positions **11** and giving a respective default value to each position **11**, the step of assigning one position **11** to be the triggering position **12** and then using the triggering position **12** as the initial position to diffusely transfer

data from the triggering position **12** to a target position **13** in a diffusion direction, for enabling the target position **13** to receive the diffusion data from the antecedent position and then to diffusely transfer the diffusion data to a next target position after a relation operation of the default value thereof with the triggering value of the triggering position.. The diffusion data may be diffused horizontally, vertically, or horizontally as well as vertically. .

The relation operation can be of EXCLUSIVE OR operation, i.e. the operation result of 0 and 0 is 0, 1 and 1 is 0, 1 and 0 is 1, 0 and 1 is 1.

Referring to FIG. 2, the diffusion data to be received by one target position **13** includes the ID code of each antecedent position from which a diffusion data is received. The default value of the target position **13** must be calculated with the diffusion data received from every antecedent position through EXCLUSIVE OR operation to provide a finished value, which is then diffused to at least one next target position horizontally, vertically, or horizontally as well as vertically.

The invention will be fully understood by means of the explanation of the following example. As shown in FIG. 3A, the zone **10** includes 6 positions **11**, respectively referenced by **P1,P2,P3,P4,P5,P6**, and the default value of each position **11** is 1

(see FIG. 3B). Position **P1** is assigned to be the triggering position **12**. According to the horizontal, vertical, and horizontally and vertically intersected diffusion direction definition, position **P2** and position **P3** are first target positions **131;131'**, position **P4** and position **P5** are second target positions **132;132'**, position **P6** is a third target position **133** (see FIG. 3C).

After EXCLUSIVE OR operation of the default value 1 of the triggering position **12** with the triggering value 1, the finished value of the triggering position **P1 (12)** is 0. This finished value is then diffusely transferred to the first positions **131;131'** in horizontal and vertical directions. After EXCLUSIVE OR operation of the default value 1 of the first target position **P2;P3 (131;131')** with the finished value 0 of the triggering position **P1 (12)**, the finished value of the first target positions **P2;P3 (131;131')** is obtained to be 1. The finished value of first target position first target position **P2 (131)** is diffusely transferred to the second target position **P4 (132)** in horizontal direction, and the finished value of the first target position **P3 (131')** is diffusely transferred to the second target position **P4 (132)** in vertical and the second target position **P5 (132')** in horizontal.

The second target position **P4 (132)** receives horizontally diffused data from **P2 (131)** and vertically diffused data from **P3 (131')**. Therefore, the default value of second target position **P4**

(132) must be calculated with the finished value 1 of the first target positions **P2;P3 (131;131')** through EXCLUSIVE OR operation, i.e. to obtain the finished value 1 for the second target position **P4 (132)**. At the same time, the second target position **P5 (132')** receives diffusely transferred data from the first target position **P3 (131')** in horizontal, and the finished value for the second target position **P5 (132')** is obtained to be 0 after EXCLUSIVE OR operation of the default value 1 of the second target position **P5 (132')** with the finished value 1 of the first target position **P3 (131')**.

After EXCLUSIVE OR operation of the second target positions **P4;P5 (132;132')**, the finished value thus obtained is diffusely transferred from the second target position **P4 (132)** to the third target position **P6 (133)** in horizontal and from the second target position **P5 (132')** to the third target position **P6 (133)** in vertical. The default value 1 of the third target position **P6 (133)** is calculated with the finished value 1 of the second target position **P4 (132)** and the finished value 0 of the second target position **P5 (132')** through EXCLUSIVE OR operation respectively, and therefore the finished value 0 is obtained for the third target position **P6 (133)**.

Therefore, when the default values (1,1,1,1,1,1) of the positions **11** of the zone **10** diffusely processed through the

triggering position **P1 (12)**, the result values obtained are (0,1,1,1,0,0) respectively. In the same way; when the default values (1,1,1,1,1,1) of the positions **11** of the zone **10** are diffusely processed through the triggering position **P2 (12)**, the result values obtained are (1,0,1,1,0,0); when the default values (1,1,1,1,1,1) of the positions **11** of the zone **10** are diffusely processed through the triggering position **P3 (13)**, the result values obtained are (1,1,0,1,1,1).

By means of triggering different positions **11** and diffusely transferring the data to all positions **11** of the zone **10**, the default values of the positions **11** can be changed into one of a number of combinations. Therefore, the user can further use a different triggering point to form a different diffusion combination. As illustrated in FIG. 4, when changing the default values (1,1,1,1,1,1) of the positions of the zone **10** into (0,0,0,0,0,0), the user needs only to trigger **P1,P1,P1** and **P4** in proper order without transferring varied data to **P1~P6**. Therefore, when wishing to control zone **10** to produce the desired variation, the user needs only to trigger a part of the positions **11**.

FIG. 5 shows an alternate form of the present invention. According to this embodiment, the zone **20** is comprised of a number of sub-zones **21**, each sub-zone **21** formed of a number of positions **22**. By means of triggering positions **22** of each sub-zone

21, the whole zone **20** is caused to make a diffusion operation, achieving a variation of the whole zone **20**.

In comparison with the prior art techniques, the invention provides the following advantages:

a. Unlike the conventional data transferring methods of giving a control instruction to every position, the invention needs only to make a triggering control at triggering positions **12** in the zone **10;20** to cause a variation of the positions **11;22** of the zone **10;20**;

b. By means of diffusion transfer among positions **11;22** to change the respective default values, the amount of control data to be transmitted from the control center is greatly reduced;

c. By means of diffusion transfer among positions **11;22**, the time in which the desired variation of the whole zone **10;20** is accurately controlled, and the time to be used for the transmission of commands from the control center is greatly reduced.

d. When using the technique of the present invention to process big scale screen motion picture data, data transfer delay from the control center to the positions **11;22** is eliminated, preventing a picture update time error.